(12) UK Patent Application (19) GB (11) 2 129 401 A

(21) Application No 8328387
(22) Date of filing 24 Oct 1983
(30) Priority data
(31) 8230556
8300404
(32) 26 Oct 1982
7 Jan 1983
(33) United Kingdom (GB)
(43) Application published
16 May 1984
(51) INT CL³
B65D 21/06
(52) Domestic classification
B8P V
U1S 1093 B8P
(56) Documents cited
GB 1574117
GB 0657502
US 4109791
(58) Field of search
B8P
(71) Applicant
C. G. Paxton Limited
(United Kingdom),
Pillory Street, Nantwich,
Cheshire
(72) Inventors
Hubert J. Holliday,
Keith J. Battrick
(74) Agent and/or Address for Service
Swindell & Pearson,
44 Friar Gate, Derby
DE1 1DA

(54) **Stacking/nesting containers**

(57) A stacking/nesting container has hingedly attached to two opposed side walls 12, 16 flaps 40 which are pivotable from a position in which they lie alongside the outer face of the wall to which they are attached to allow a similar container to be nested in the container to a further position in which they partially overlie the open top of the container so that they can support the outer edges of a similar container stacked thereon. The flaps 40 may have channels to receive downwardly directed flanges or rails formed on the base of the similar container. The sides 12—18 of the container are moulded of stepped construction, each step being of equal height.

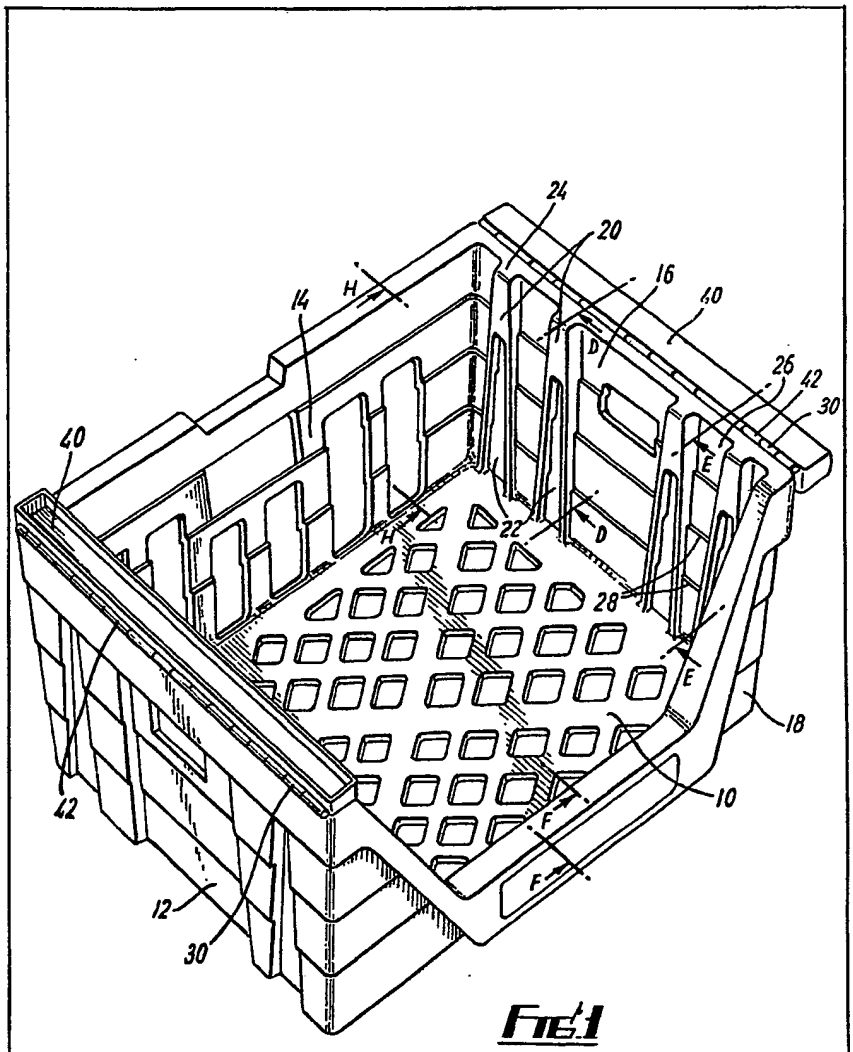


FIG.1

BEST AVAILABLE COPY

GB 2 129 401 A

The drawings originally filed were informal and the print here reproduced is taken from a later filed formal copy.

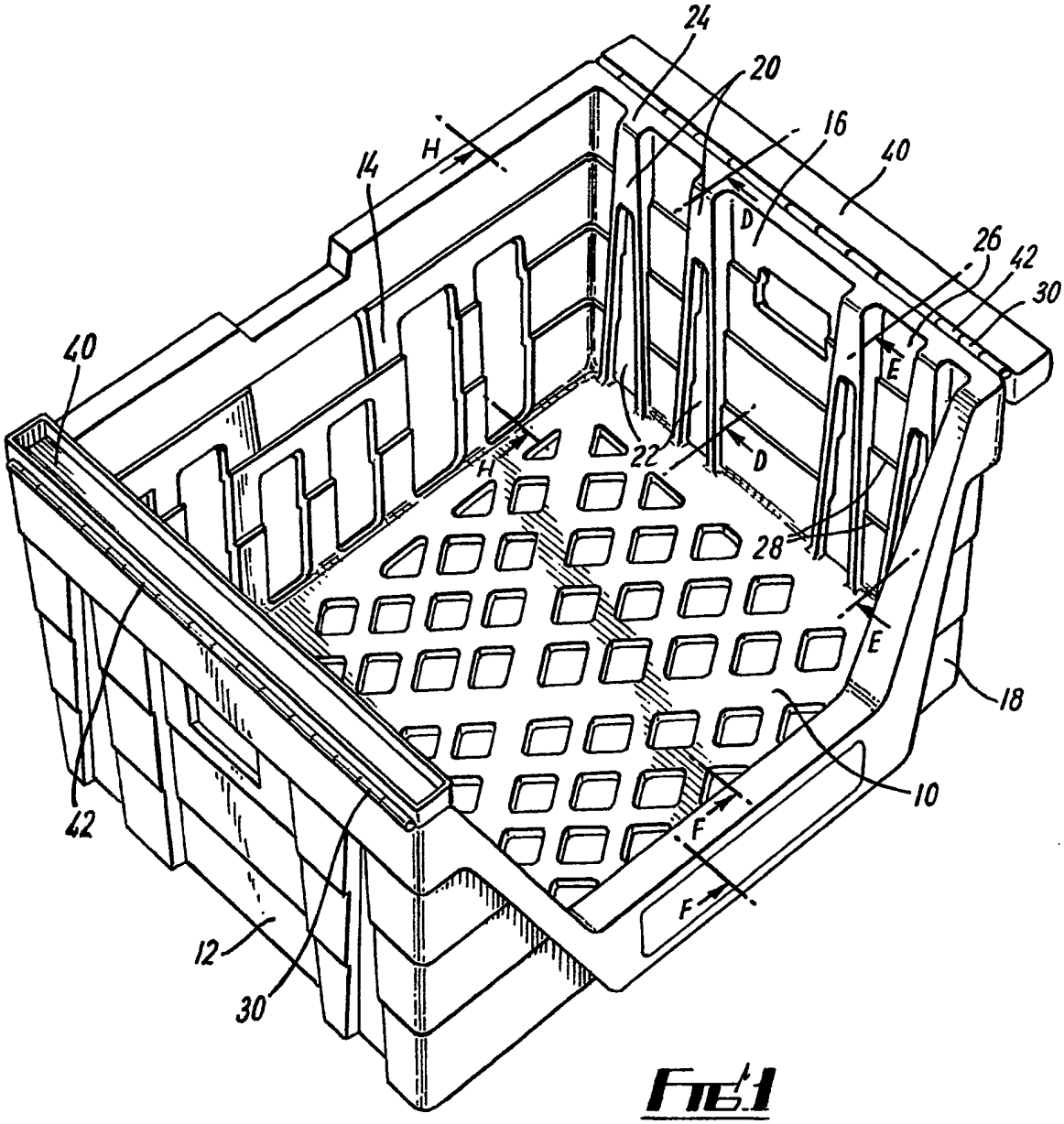


FIG.1

BEST AVAILABLE COPY

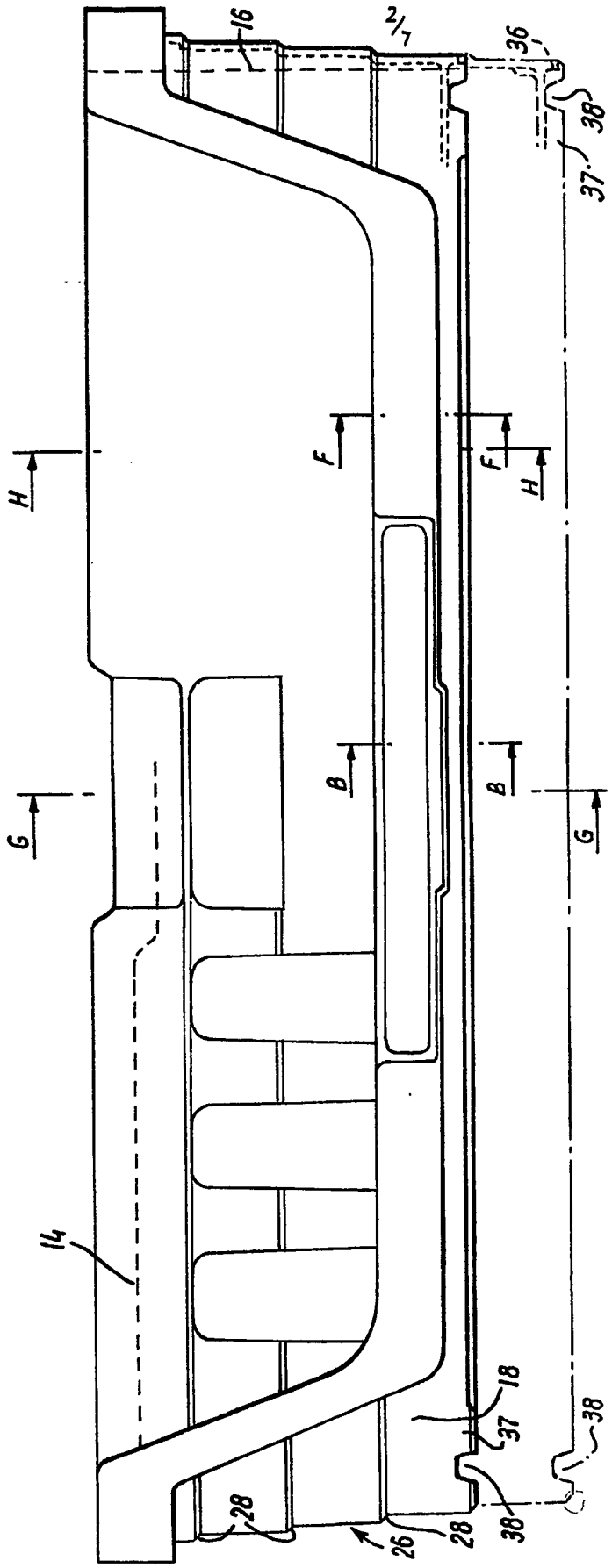


FIG.2

BEST AVAILABLE COPY

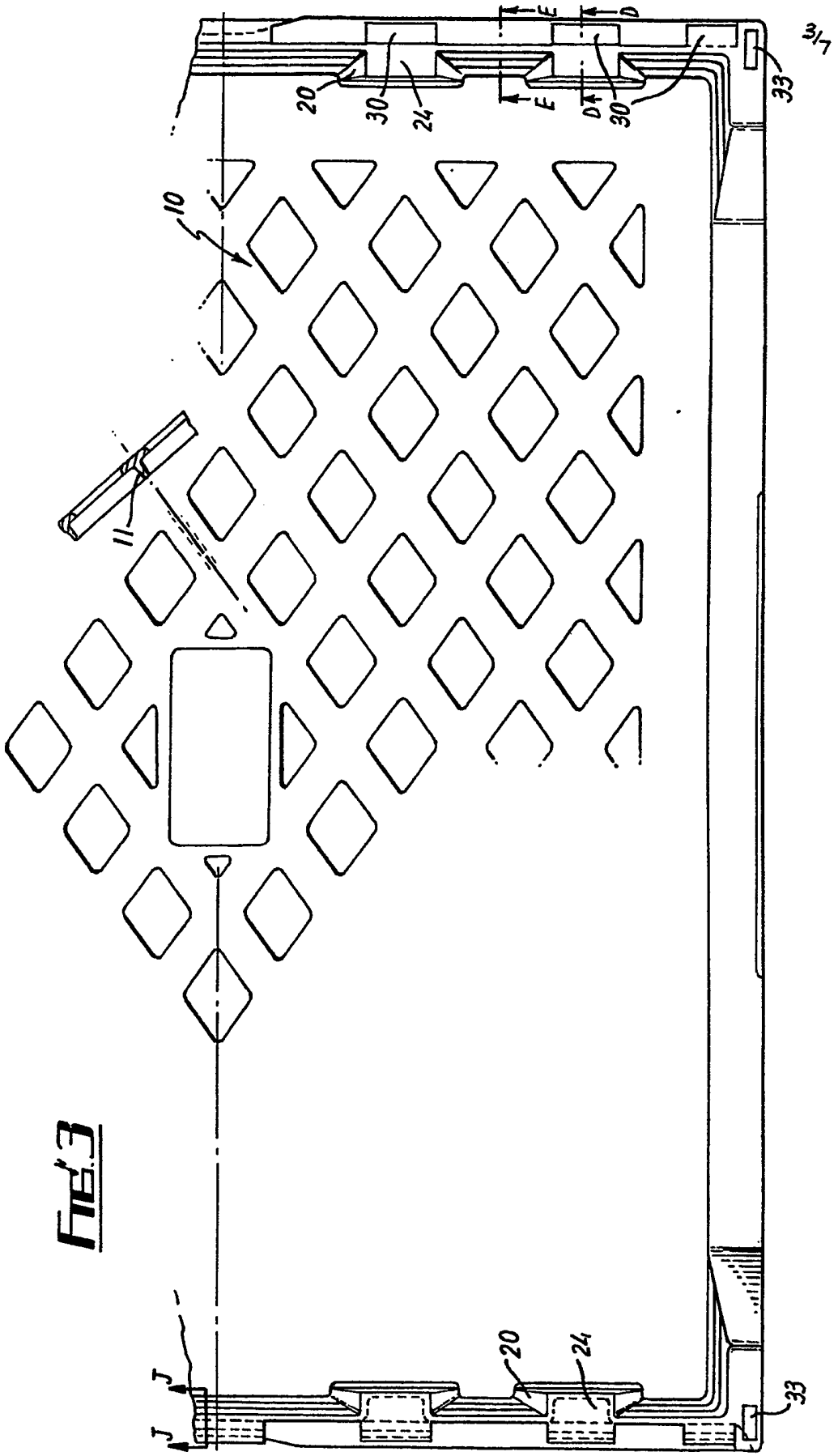


FIG.3

BEST AVAILABLE COPY

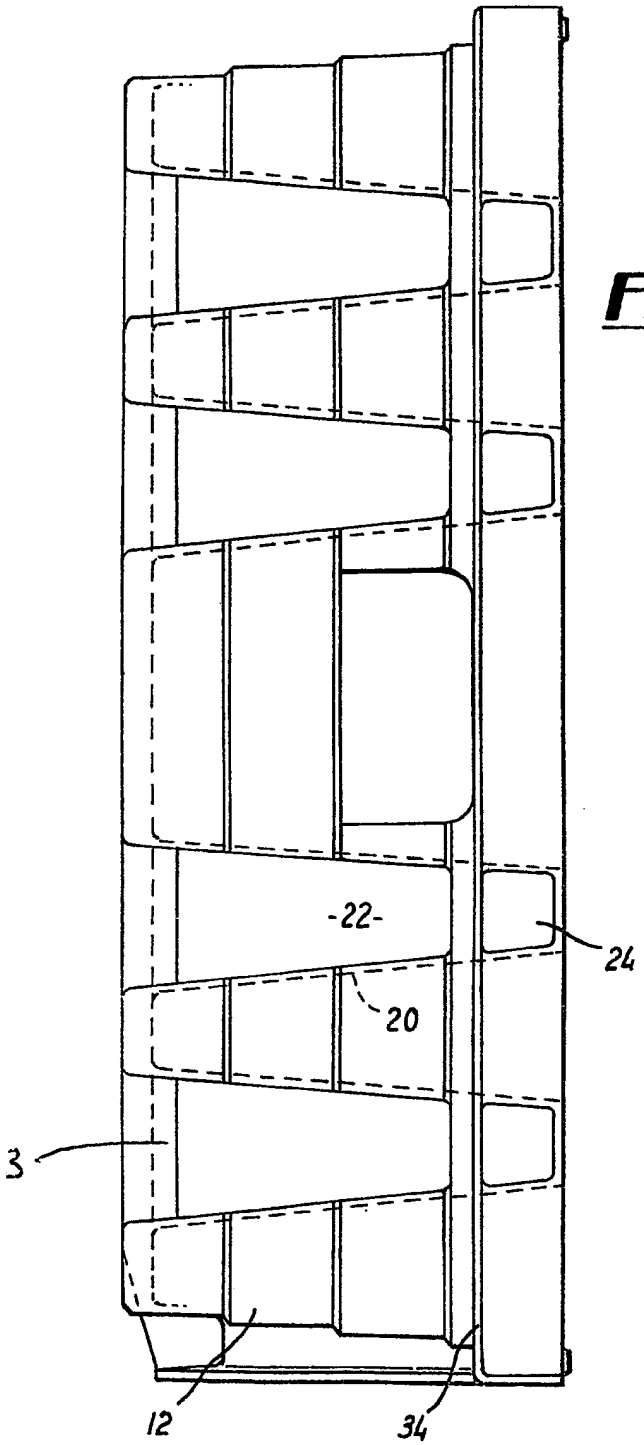
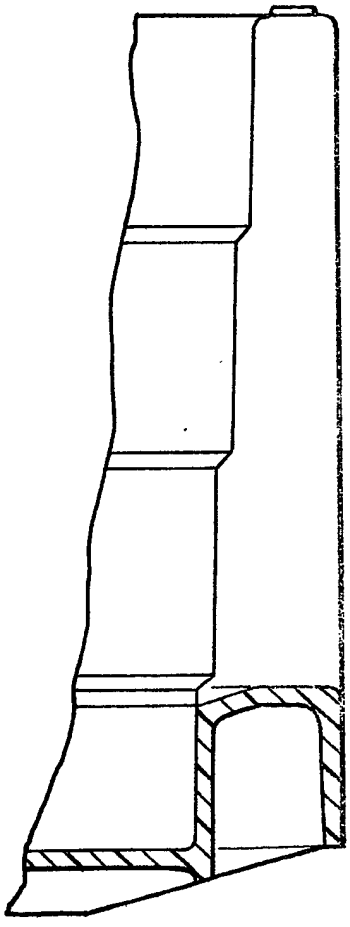


FIG. 4

FIG. 9



BEST AVAILABLE COPY

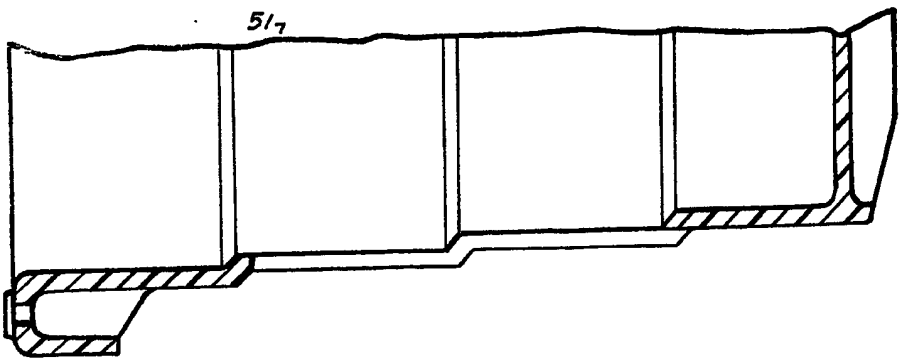


FIG. 8

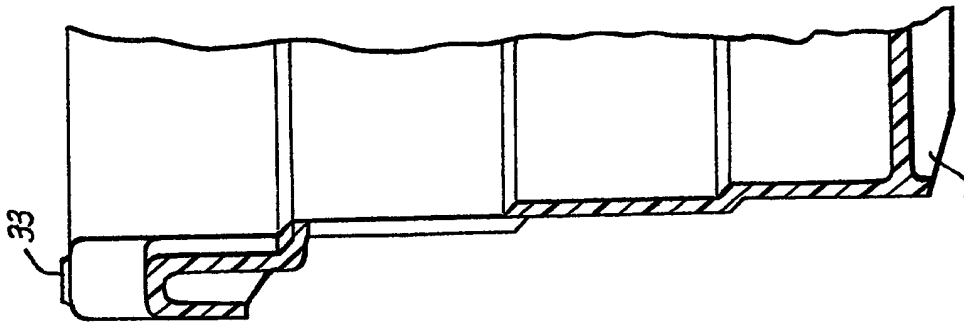


FIG. 7

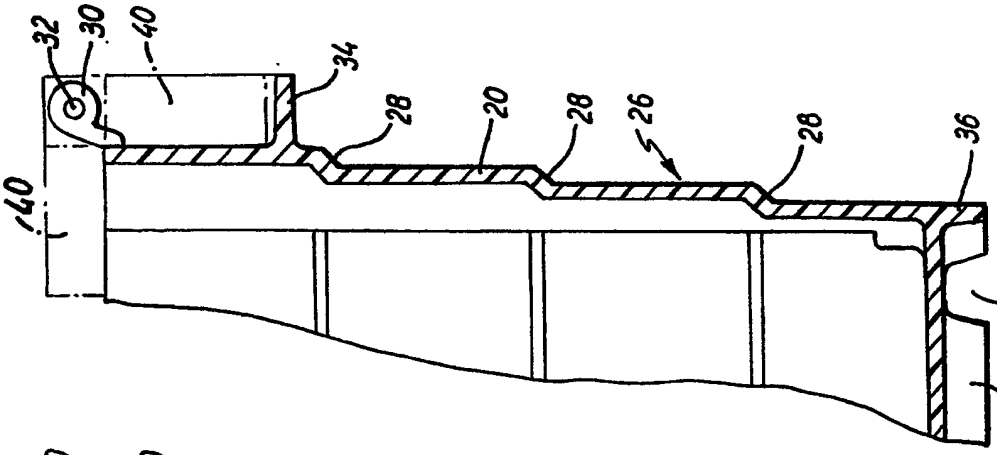


FIG. 6

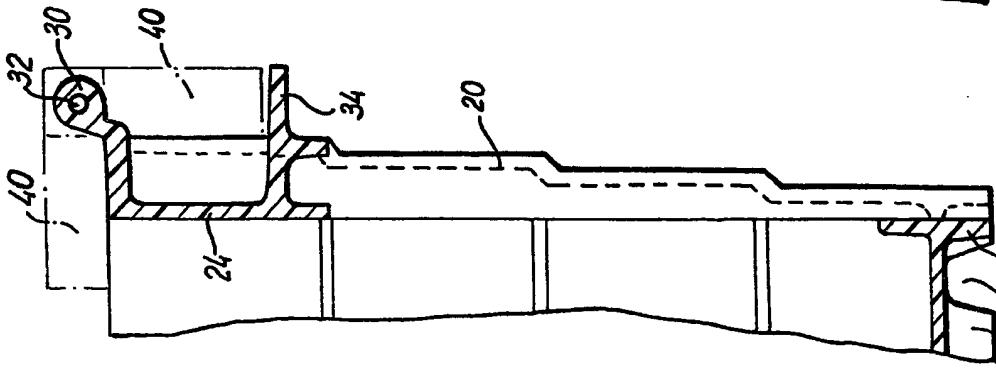


FIG. 5

BEST AVAILABLE COPY

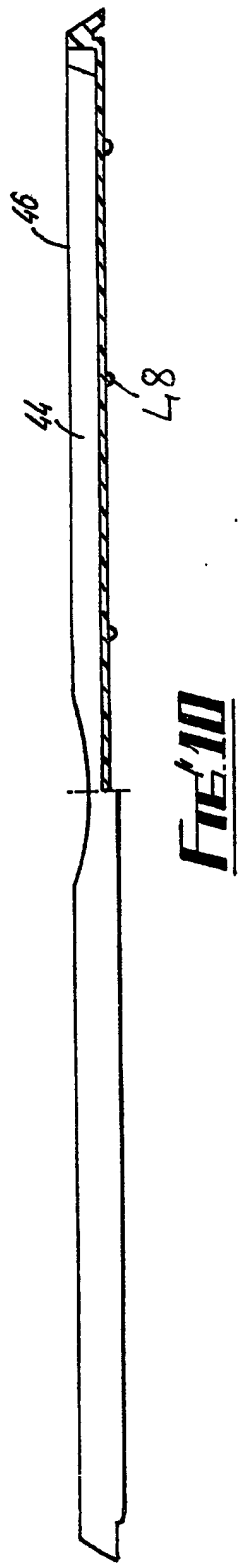


FIG.10

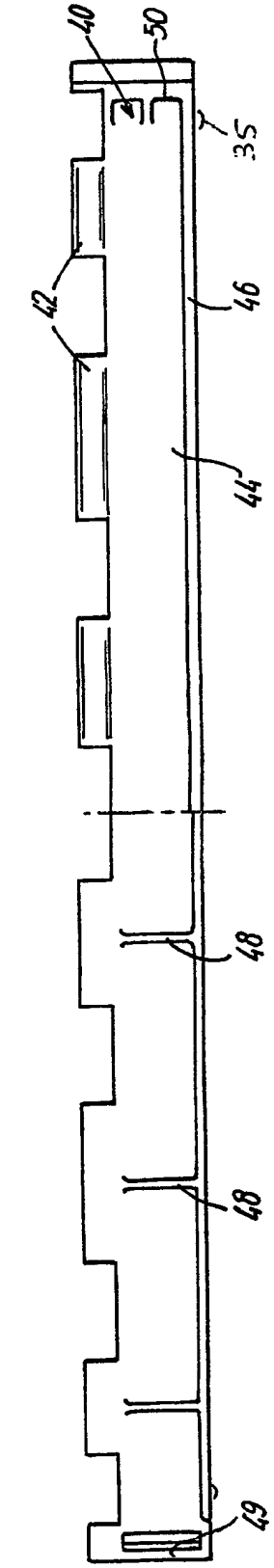


FIG.11

2129401

BEST AVAILABLE COPY

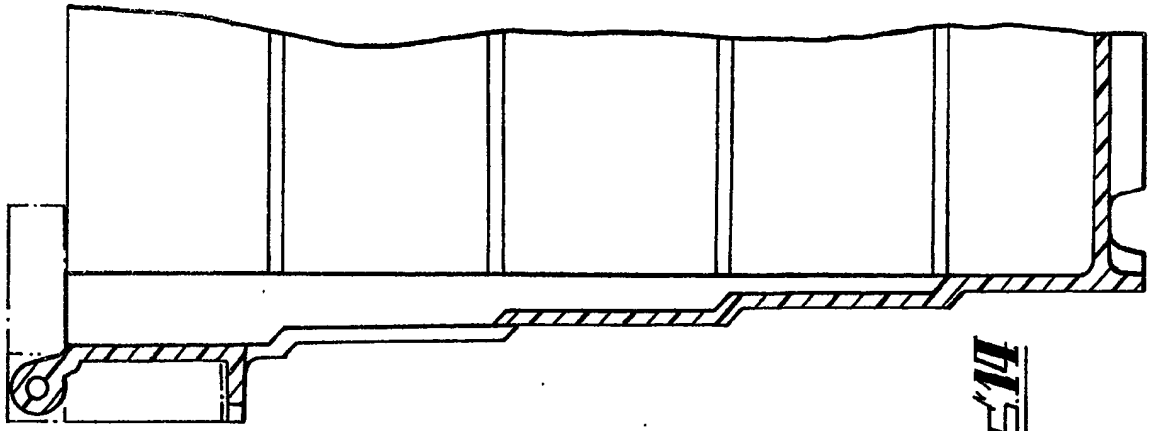


FIG.14

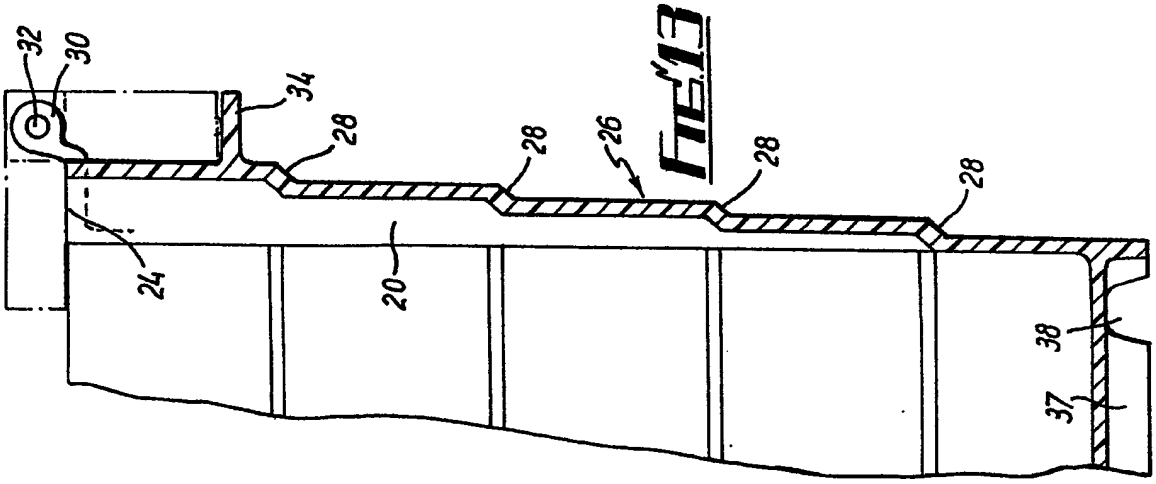


FIG.13

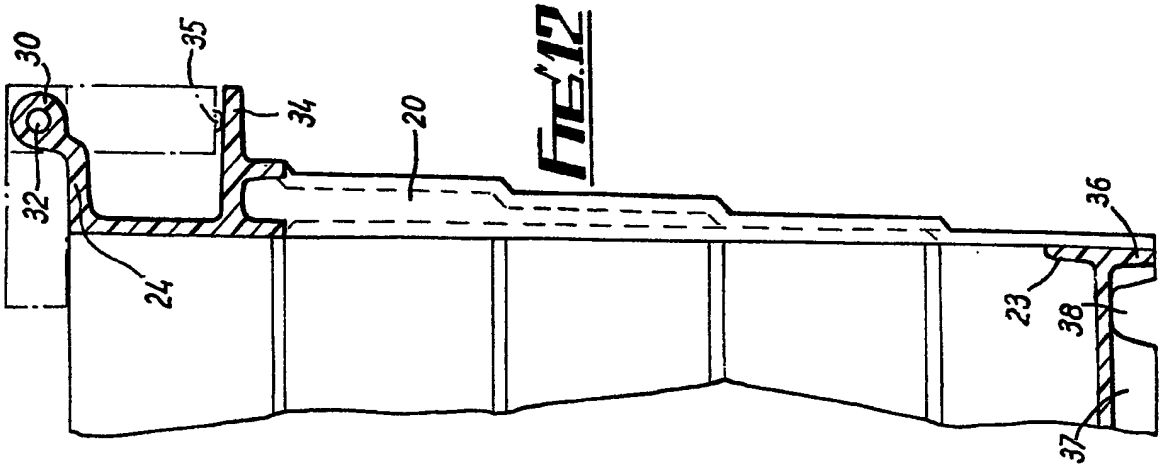


FIG.12

BEST AVAILABLE COPY

SPECIFICATION

Improved stacking/nesting container

The present invention concerns improvements in or relating to stacking/nesting containers, particularly but not exclusively containers adapted for the transportation of loaves of bread.

Containers of this nature are designed to fulfil certain basic functions. They must be capable of containing and protecting loaves of bread during transportation and to this and they comprise essentially open topped baskets normally manufactured by moulding from a plastics material. So that transportation may be facilitated it is essential that the baskets full of products may stack one on top of the other without damaging the product. At the point of sale it is preferable that the containers can be unloaded without the necessity of unstacking them. Thus one side of the container is left effectively open so that products can be removed by way of this side rather than by way of the open top of the container. To save space when empty containers are being transported back to the bakery it is necessary that one empty container can nest within a similar empty container.

Various means have been proposed in the past for providing the stacking/nesting facility. One solution to the problem has been to provide a container which converges in a downward direction with projections such that in one orientation a similar container may nest within it but by rotating the container through 180° the projections come into registry so that one container stacks on the other.

Another solution has been to provide metal bails pivotally mounted to the container walls, the bails comprising essentially elongate members running alongside and parallel to the walls and being pivotable from a position outside the container to a fixed position whereby they lie across the open top of the container. With the bails in the outermost position the containers can nest one within the other whereas with the bails in the internal position a container can stack on top of the bails.

Containers of this nature have certain disadvantages for example the container with the metal bails is relatively expensive to produce in view of the cost of the metal bails which, it will be realised, must be sufficiently substantial, in view of their unsupported length, to support a loaded container without deflecting appreciably.

In addition the upper level of the bail when in a stacking condition normally rests below the level of the open top of the container and as a result it is cumbersome and often dangerous to place a loaded container on top of a high stack of containers as a lifting action to clear the rim of the container is required and thereafter an upward tilting of the container about its bottom end corner so that the remainder of the container clears the rim of the container on which it is being stacked. To unload a container of this nature from a high stack is often dangerous as the lifting and tilting operations have to be carried out above head height.

A further disadvantage of previous containers which, as has been mentioned above, are normally manufactured by an injection moulding technique from plastics material, is that containers of different depths are required for different products. This means that several moulding tools which are extremely expensive to produce are required, one for each container depth.

It is an object of the present invention to obviate or mitigate the above disadvantages.

According to one aspect of the present invention there is provided a stacking/nesting container comprising an open topped container with a base and side walls, said side walls converging towards the base of the container, the upper end of at least one side wall being provided with a flap hinged relative thereto and movable between a first position where it lies clear of the open top of the container and a second position where it partially projects across the open top of the container the dimension between the inner longitudinal edge of the flap when in its second position on the inner edge of the opposite wall or the inner edge of a flap hinged to said second wall being less than the dimension of the base of the container parallel to the said dimension such that a similar container can stack on the said container when the flap(s) occupy said first position.

Preferably two flaps are provided, one on each of two opposing side walls.

Preferably the top of said side walls and said flaps are provided with a plurality of hinge tabs each having an aligned passage therethrough for reception of a hinge pin, the tabs of the flaps being staggered with respect to the tabs of the wall and extending along the length of the flap and wall.

The hinge pin may be of a flexible plastics material.

Preferably the upper side of each flap, that is the side which is in the uppermost position when the flap projects partially across the open top of the container, has a channel formed therein extending parallel to the hinge pin.

In an alternative arrangement the flap can be formed integrally with the side wall, the connection therebetween being a strip of flexible tough plastics material which acts as a hinge.

Preferably the side walls have pillars formed therein at spaced intervals along their length, the innermost faces of each pillar may be provided with an aperture. The aperture may terminate above the base of the container. Preferably the upper end of each pillar is formed with a flat top to support the flap when in its second position. On the external surface of the side walls there may be formed a projecting flange the height of which is approximately equal to the thickness of the flap and the spacing of which below the hinge pin is slightly greater than the width of the flap. Preferably the inner edge of the flap, in its second position, has two detents formed thereon whereby the flap may be snap fitted against said flange

when in its first position.

Preferably near the end of each of said opposed side walls there is provided an upwardly direction protrusion adapted to co-operate with a downwardly directed protrusion from the flap when said flap is in its second position, the abutment of the side faces of said protrusions limiting relative movement therebetween.

Preferably a downwardly directed flange is formed on the base of the container extending under each side wall such that when one container is stacked on a similar container the flanges are accommodated in the channels formed in the flaps.

Said flanges may have notches formed therein adjacent the rear wall of said container, the notches being adapted to accommodate an end wall of said channels in the flaps whereby the container can be stacked on another container in a rearwardly staggered manner.

According to a further aspect of the present invention there is provided a stacking/nesting container comprising a base and upwardly diverging side walls extending from said base, said side walls having a stepped configuration whereby during the manufacture of the container by a moulding technique containers of differing heights can be provided by adding steps.

Preferably the steps are each of equal height.

According to a further aspect of the present invention there is provided a mould for manufacturing a stacking/nesting container of the type descrived in the preceding two paragraphs, said mould being split in a plane parallel to the base of the container and a mould section for replacing one of the sections defined by said split for use in moulding a container of different depth from that moulded by the unmodified mould. (It should be realised that the mould is a two part mould, the parts of which define a cavity therebetween in which the container is formed.)

An embodiment of the present invention will now be described by way of example only with reference to the accompanying drawings in which:—

Fig. 1 shows a diagrammatic perspective view of a stacking/nesting container.

Figs. 2, 3 and 4 show respectively a front elevation, plan and side elevation of a container similar to but not corresponding exactly with the container shown in Figure 1,

Figs. 5, 6, 7, 8, and 9 show sections on the lines D—D, E—E, G—G, H—H and F—F of the container shown in Figs. 1 and 2,

Fig. 10 shows an elevation, half in section, of a flap for the container shown in the preceding figures,

Fig. 11 shows a plan, half from above and half from below of said flap,

Figs. 12, 13 and 14 show sections on the lines B—B, E—E and J—J of a modified container the outline of which is shown in phantom lines in Fig. 2.

A stacking/nesting container, as illustrated in Figure 1, comprises a perforated base 10 having strengthening webs 11 on its underside and extending upwardly from said base side walls 12, 14, 16 and 18. Side wall 18 is of limited height to provide a partially open front to the container. The side walls each have upwardly converging pillars 20 formed on their inner faces, the pillars having their wall parallel to the side walls removed to form apertures 22, the top 24 of the pillars coinciding with the top level of the container. The apertures terminate above the base, leaving a raised rim 23, which ensures crumbs etc. do not spill out of the container. The container walls 26 intermediate the pillars are formed into a plurality of steps 28 the walls between said steps lying at an angle of 1° to the base. A plurality of spaced hinge tabs 30 are formed integrally with the top of two opposed side walls 12, 16 each tab having a circular passage 32 for a hinge pin. Rectangular protrusions 33 are formed at the top of the container at its corners.

A flange 34 projects outwardly from the side walls 12, 16 adjacent the top thereof, the flange will be described in further detail below.

A flange 36 projects downwardly from the base of the container below the side walls 12, 16 and a further partial flange 37 projects downwardly from the base at its corners below front and rear walls 12 and 14, 18. Notches 38 are formed in the flange 37 below the walls 14, 18 adjacent to the walls 12, 16.

Flaps 40 are hingedly attached to the upper edges of the side walls 12, 16. As can be seen from Figure 11 each flap has provided along one edge thereof a plurality of spaced hinge tabs 42 the position and spacing of which corresponds with the hinge tabs 30 such that, as can be seen more clearly from Figure 1, each flap is hinged along its entire length to the top of the sides 12, 16 by a hinge pin passing through the passages 32 in the tabs 30 and corresponding passages in the tabs 42. Figures 5 and 6 show that the flaps 40 can occupy two positions as shown by the chain dotted lines. The first or stacking position has the flap 40 pivotted such that it projects inwardly across the open top of the container with its underside resting on the upper edge 24 of the pillars 20. In its second or nesting position the flap has been hinged anticlockwise, as viewed in Figures 5 and 6, from the first position in which it lies downwardly alongside the side walls 12, 16. It will be realised that in this position the flap does not obstruct the open top of the container and is protected by the flange 34 projecting outwardly from the side wall. Detents 34 formed from the edge of the flap opposite the hinge tabs co-act with the flange to fix the flap in said second position. A channel 44 is formed in the upper face of the flap by providing a raised peripheral rim 46. This channel is intended to receive the downwardly directed peripheral flange 36 of a container stacked on said container. The notches 38 are provided in the flange 37 to accommodate the rims 46. Strengthening ribs 48 are provided on the base of the flap and are located at the midpoint of each hinged tab 42. The end-most

strengthening ribs 49, when the flap is in its first position lie alongside the protrusions 33 on the container top and serve to limit outward movement of the front 16 and back 14 when the flaps 40 occupy their first position.

The dimension of the flaps perpendicular to their longitudinal axis is such that the inner edge of the flap, when in the first position shown in Fig. 1, is closer to the centre line of the container than the outer edge of the base.

It will be realised therefore that in operation when the flaps are in said innermost position if a similar basket is lowered on top of the basket above described it will stack on the flaps. The upper basket need not be lowered on to the lower basket but can be pushed across its top from front to back or back to front simply by locating the flanges 36 projecting from the base of the side walls 12, 16 in the channel 44 of the flaps 40 and pushing the basket along until it reaches the end rim 50 of the flaps.

To nest empty containers all that is required is to pivot the flaps to the position in which they lie downwardly alongside the side walls thereby presenting an unexposed open top to the container and allowing nesting of one container with a similar container. A major part of the upper container is nested within the lower container owing to the downward convergence of the side walls and the fact that there are no obstructions to stacking on the inner and outer faces of said side walls, the apertures 22 of the upper container accommodating the pillars 20 of the lower container.

It can be seen by observing Figures 12, 13, 14 that the invention described above is not altered by altering the height of the walls of the container to suit different products. As the containers are manufactured from polyethylene by injection moulding and have a plan size of approximately 550 x 750 mm and a height of approximately 180 mm (in the Figures 5—9) embodiment the size and cost of the mould is high. As a result it would be desirable to manufacture containers of different heights utilising only one main mould and smaller replacement sections. This can be achieved by a further aspect of the present invention which utilises the stepped configuration of the walls described above. The steps 28 in the walls are equispaced and have an outward flare angle of 1°. By providing a separation split in the mould parallel to the base at a step it is possible to utilise two different base sections, one having one step, the other two, the one step base providing walls shown in Figures 5—9, the two step base providing walls as shown in Figures 12, 13, 14.

It will be realised further that the mould comprises two main parts one of which is inserted into the other to provide a cavity between the parts into which the material to be moulded is introduced. As a result, since the walls of the container diverge upwardly, that is they diverge in a direction of removal of the inner section of the mould from the outer, separation of the moulded article from the mould will be facilitated.

Various other modifications can be made without departing from the scope of the invention, for example the number, disposition, shape etc. of the apertures, pillars, steps, hinge tabs may be varied. The wall 18 need not have a loading opening therein and the flaps may have a different shape and form provided they facilitate stacking and nesting. It will be realised that the manufacture of the flaps as a separate components from the rest of the container and the subsequent assembly thereof on the container is time-consuming and consequently expensive. In a modification, not shown, this expense is minimised by forming the flap integrally with the side wall on the top thereof, the attachment of the flap to the side wall being by means of a strip of plastics material which is relatively thin when compared to the wall thickness of the remainder of the container, is flexible and can withstand repeated flexing without fracture such that the hinge is formed integrally with the flap and side wall. A further modified hinge utilises a nylon hinge pin which can be fed through the passages 32 from a gap between hinge tabs. If it is desired to stack containers in a stepwise fashion rather than one above the other a notch (not shown) can be formed in the flanges 36 near the rear of the container. The notch accommodates the end rim 50 of the flap of the lower container.

In a further modification only one flap of double width is provided. A container stacked thereon thus rests on the flap and the top of the opposite side wall.

CLAIMS

1. A stacking/nesting container comprising an open topped container with a base and side walls converging towards the base of the container, the upper end of at least one side wall being provided with a flap hinged relative thereto and movable between a first position where it lies clear of the open top of the container and a second position where it partially projects across the open top of the container, the dimension between the inner longitudinal edge of the flap when in its second position and the inner edge of the opposite wall or the inner edge of a flap hinged to said second wall being less than the dimension of the base of the container parallel to the said dimension such that a similar container can stack on the said container when the flap(s) occupy said first position.

2. A container as claimed in claim 1, in which two flaps are provided, one on each of two opposing side walls.

3. A container as claimed in claim 1 or claim 2, in which the top of said side walls and said flaps are provided with a plurality of hinge tabs each having an aligned passage therethrough for reception of a hinge pin, the tabs of the flaps being staggered with respect to the tabs of the wall and extending along the length of the flap and wall.

4. A container as claimed in claim 3, in which the hinge pin is of a flexible plastics material.

5. A container as claimed in any one of claims 2, 3 and 4, in which the side of each flap which is

uppermost when the flap projects partially across the open top of the container has a channel formed therein extending parallel to the hinge axis.

6. A container as claimed in claim 1 or claim 2, in which the flap is formed integrally with the side wall, the connection therebetween being a strip of flexible tough plastics material which acts as a hinge.

7. A container as claimed in any one of the preceding claims, in which the side walls have pillars formed therein at spaced intervals along their length.

8. A container as claimed in claim 7, in which the innermost face of each pillar is provided with an aperture.

9. A container as claimed in claim 8, in which the aperture in a pillar terminates above the base of the container.

10. A container as claimed in any one of claim 7, 8 and 9, in which the upper end of each pillar is formed with a flat top to support the flap when in its second position.

11. A container as claimed in any one of the preceding claims, in which on the external surface of each side wall provided with a flap there is formed a projecting flange the height of which is approximately equal to the thickness of the flap and the spacing of which below the hinge axis is slightly greater than the width of the flap.

12. A container as claimed in claim 11, in which the inner edge of the flap, in its second position, has at least one bulbous protrusion formed thereon whereby the flap may be snap fitted against said flange when in its first position.

13. A container as claimed in any one of the preceding claims, in which near the end of each opposed side wall provided with a flap there is provided an upwardly directed protrusion adapted to co-operate with a downwardly directed protrusion from the flap when said flap is in its second position, the abutment of the side faces of said protrusions limiting relative movement between the flap and wall.

14. A container as claimed in any one of claims 5 to 13, in which a downwardly directed flange is formed on the base of the container extending under each side wall such that when one container is stacked on a similar container the flanges are accommodated in the channels formed in the flaps.

15. A container as claimed in claim 14, in which said flanges have notches formed therein adjacent the rear wall of said container, the notches being adapted to accommodate an end wall of said channels in the flaps whereby the container can be stacked on another container in a rearwardly staggered manner.

16. A container substantially as hereinbefore described with reference to the accompanying drawings.

17. A stacking/nesting container comprising a base and upwardly diverging side walls extending from said base, said side walls having a stepped configuration whereby during the manufacture of the container by a moulding technique containers of differing heights can be provided by adding steps.

18. A container as claimed in claim 17, in which the steps are each of equal height.

19. A container as claimed in claim 17 or 18 and including also the features claimed in any one of claims 1 to 16.

20. A mould for manufacturing a stacking/nesting container as claimed in any one of claims 17, 18 and 19, said mould being split in a plane parallel to the base of the container and a mould section for replacing one of the sections defined by said split for use in moulding a container of different depth from that moulded by the unmodified mould.

21. A mould substantially as hereinbefore described with reference to the accompanying drawings.

Printed for Her Majesty's Stationery Office by the Courier Press, Leamington Spa, 1984. Published by the Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from which copies may be obtained.